

CLAIMS

WHAT IS CLAIMED IS:

1. An operator for a rotatable spindle, comprising:

5 a hub, the hub having a receiver and an arm extending from the receiver, the receiver adapted to connect to the spindle; and

a handle having a cavity, the handle pivotally connected to the arm, the handle pivotable between a closed position wherein a portion of the receiver is positioned within the cavity, and an open position, wherein the receiver is substantially outboard of the cavity.

10 2. The operator of claim 1 wherein the handle further comprises a base and a pair of sidewalls extending from the base, wherein the base and sidewalls define the cavity.

3. The operator of claim 2 wherein the handle further comprises a knob rotatably connected to the base.

4. The operator of claim 1 wherein the receiver has a bore adapted to receive a portion of the spindle.

15 5. The operator of claim 1 wherein the handle further comprises means for retaining the handle in the open position.

6. The operator of claim 5 wherein the means for retaining the handle in the open position is a spring.

20 7. The operator of claim 6 wherein the spring is a leaf spring positioned in spaced relationship from an engagement surface of a nose.

8. The operator of claim 1 further comprising a pin, wherein the pin pivotally connects the handle to the arm.

25 9. The operator of claim 1 further comprising a leaf spring in spaced relationship from a mating surface and wherein the handle is moveable to a deployed position such that the leaf spring is brought into engagement with the mating surface.

10. The operator of claim 9 wherein an intermediate position is defined between the closed position and the open position, wherein the arm flexes the leaf spring when the handle is in the intermediate position.

30 11. The operator of claim 10 wherein the flexing of the leaf spring provides tension that supports the weight of the handle.

12. The operator of claim 10 wherein the arm flexes the leaf spring as the handle moves towards the open position to thereby provide a force of frictional engagement between the spring and the mating surface.

13. The operator of claim 9 wherein the handle drops back to the closed position when the handle moves from the intermediate position to the closed position and the leaf spring is no longer engaged with the mating surface.

14. The operator of claim 9 wherein the leaf spring is un-flexed when the handle is in the closed position.

15. The operator of claim 9 wherein the leaf spring is un-flexed when the handle is in the open position.

16. A fold down operator for a rotatable spindle of casement window assembly, the operator comprising:

a hub, the hub having a receiver and an arm extending from the receiver, the receiver adapted to connect to the spindle; and

a handle having a cavity, the handle pivotally connected to the arm, the handle pivotable between a closed position wherein a portion of the receiver is positioned within the cavity, and an open position, wherein the receiver is outboard of the cavity.

17. The operator of claim 16 further comprising a pin, wherein the pin pivotally connects the handle to the arm.

18. The operator of claim 16 wherein the arm is positioned within the cavity when the handle is in the closed position.

19. The operator of claim 16 wherein the entire receiver is positioned within the cavity when the handle is in the closed position.

20. The operator of claim 16 wherein the handle has a first end, a second end, a base, and a pair of sidewalls extending from the base.

21. The operator of claim 20 wherein the base and sidewalls define the cavity.

22. The operator of claim 16 wherein the handle has a leaf spring positioned inside the cavity.

23. The operator of claim 22 wherein the leaf spring confronts the arm as the handle is pivoted from the closed position to the open position, to maintain the handle in the open position.

24. The operator of claim 16 further comprising a leaf spring supported within a cavity of the handle and confronting the hub.

25. The operator of claim 24 wherein an intermediate position is defined between the closed position and the open position, wherein the arm flexes the leaf spring when the handle is in the intermediate position.

26. The operator of claim 25 wherein the flexing of the leaf spring provides tension that supports the weight of the handle.

27. The operator of claim 25 wherein the arm flexes the leaf spring in a second portion of the intermediate position as the handle moves towards the closed position providing tension that supports the weight of the handle.

28. The operator of claim 25 wherein the handle snaps into the open position when the handle moves from the intermediate position to the open position.

29. The operator of claim 24 wherein the leaf spring is un-flexed when the handle is in the closed position.

30. The operator of claim 24 wherein the leaf spring is un-flexed when the handle is in the open position.

31. A fold down operator for a rotatable spindle of a rotary device for a casement window assembly, the operator comprising:

a hub, the hub having a receiver and an arm extending from the receiver, the receiver adapted to connect to the spindle, the arm having an opening;

a handle having a base and a pair of sidewalls extending from the base, wherein the base and sidewalls define a cavity;

a pin pivotally connecting the handle to the arm, wherein the handle is pivotable between a closed position wherein a portion of the receiver is positioned within the cavity, and an open position, wherein the receiver is outboard of the cavity.

32. The operator of claim 31 further comprising a cover adapted to cover the rotary device.

33. The operator of claim 32 wherein the handle is positioned substantially flush with the cover when the handle is in the closed position.

34. The operator of claim 32 wherein the cover has an opening positioned around the rotatable spindle.

35. The operator of claim 32 wherein the cover has a recess, wherein the handle has a knob, wherein the recess receives the knob when the handle is in the closed position.

36. The operator of claim 31 wherein the handle has a first end and a second end, wherein the handle has a knob rotatably connected to the second end.

5 37. The operator of claim 31 further comprising a leaf spring connected to the handle, wherein the leaf spring is adapted to confront the arm as the handle is moved between the closed position and open position.

38. The operator of claim 37 wherein the handle further has an intermediate position between the open position and closed position.

10 39. The operator of claim 38 wherein the arm confronts and flexes the leaf spring when the handle is in the intermediate position.

40. The operator of claim 39 wherein the leaf spring is unflexed when the handle is in an approximate second half of the intermediate position towards the closed position.

15 41. The operator of claim 37 wherein the leaf spring is un-flexed when the handle is in the open position.

42. The operator of claim 37 wherein the leaf spring is un-flexed when the handle is in the closed position.

43. A fold down operator for a rotatable spindle of a window assembly, the operator comprising:

20 a hub having a receiver adapted to connect to the spindle, the hub further having an arm;
a handle pivotally connected to the arm;
a leaf spring connected to the handle and confronting the arm,
wherein the handle is movable between a closed position and an open position, an intermediate position defined between the closed position and the open position, wherein the arm
25 flexes the leaf spring when the handle is in the intermediate position.

44. The operator of claim 43 wherein the flexing of the leaf spring provides tension that supports the weight of the handle.

45. The operator of claim 43 wherein the handle snaps into the open position when the handle moves from the intermediate position to the open position.

46. The operator of claim 43 wherein the leaf spring is un-flexed when the handle is in the closed position.

47. The operator of claim 43 wherein the leaf spring is un-flexed when the handle is in the open position.

5 48. An operator for a rotatable spindle for a casement window, comprising:
a cover having a cover body with an opening configured for passage of a window spindle, and having an outer recess formed of generally opposed sidewalls with an open terminal end of the recess;

10 a hub having a receiver configured for connection to a window spindle and having an arm extending radially outward of the receiver; and

15 a handle pivotally connected to the hub at a hinge axis and having a knob positioned on the handle opposite the hub connection, the handle being movable relative said cover between a use configuration extending away from the cover, to a storage configuration wherein an extent of the knob is positioned within the recess and a gripping portion of the knob is exposed within the recess at the recess open end.

49. The operator of claim 48, wherein;
the knob has a terminal end surface that is exposed at the open terminal end of the cover recess.

20 50. The operator of claim 48, wherein;
at least a portion of the knob extends outward of the cover recess when the handle is in the storage configuration.

25 51. The operator of claim 48, further comprising:
the handle has a cavity positioned adjacent said connection to the arm, a spring member is positioned within the cavity and positioned to engage a surface of the arm when the handle is moved between use and storage configurations.

52. The operator of claim 51, wherein;
the spring member is a leaf spring positioned relative the arm to engage a protruding terminal end of the arm.

53. The operator of claim 52, wherein;
the protruding end of the arm comprises a body portion having a terminal end surface,
and a thickness between the terminal end surface and the hinge axis being greater than a
thickness between an adjacent surface and the hinge axis.